UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,114	04/08/2004	Yoshihiko Imanaka	042307	8372

38834 7590 04/20/2007

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER	
DANG, TRUNG Q	
ART UNIT	**PAPER NUMBER**
2823	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/820,114	IMANAKA ET AL.	
	Examiner	Art Unit	
	Trung Dang	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-19 and 47-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-19 and 47-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 13-18, 47, and 50-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Renn (US 2003/0048314 of record).

Renn teaches a method of fabrication active and passive components on a circuit substrate (para. [0108]), which includes deposition of conductors, resistors, dielectrics (para.[0097]), inductor (Fig. 13 and related text), interconnects (para. [0139]), said method comprising a film forming step, said film forming step forming at least on of said dielectric film, said resistor film and said conductor film film by ejecting dry aerosol of fine solid particle material with a carrier gas (para. [0130]). Note that, as disclosed in para. [0130], the droplets are dried by the sheath gas, resulting in dried particles deposited on the substrate, hence the disclosed aerosol is a **dry** aerosol as claimed. For the claimed limitation regarding the carrier gas, see para. [0055].

For claims 14 and 18, see para. [0160] for the disclosure that the disclosed process can be used to deposit electronic materials onto polymer substrate which includes resin because resin is a polymer.

For claim 15, see para. [0067] for the velocity of aerosol stream.

For claim 17, see paras. [0106] and [0115] for the particle size.

For claim 47, because the disclosed method includes fabrication of metal interconnects, and further discloses that dry aerosol of fine particle can be used to deposit dielectric therefore the claimed limitation "interlayer insulation film and a conductor layer are laminated" is met.

For claims 50 and 51, Renn's process is an impact activation process because the films are deposited by impaction of particles on the substrate.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Renn as above in view of Matsuo (US 6,504,227 of record)

Renn teaches a dry aerosol process for making an inductor as described above. Renn differs from the claim in not disclosing the step of planarizing the surface after the inductor film are formed. Matsuo teaches a process of making an inductor in which after the inductor film 14 are formed on a substrate, an planarization process is employed (Fig. 3C and related text).

It would have been obvious to one of ordinary skill in the art to modify Renn's teaching by performing a planarizing process as claimed because such process is well known in the art as suggested by Matsuo to provide a planar surface so that the

formation of metal wires on the substrate would be easier without breaking the metal wires.

5. Claims 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Renn as above in view of Hara et al. (US 2001/003122 of record).

Renn teaches a process as described above, including a process of making interconnects wherein the dielectric (interlayer insulation) is formed by a dry aerosol process. McMillan differs from the claim in not disclosing the technique of which the metal interconnects are formed. Hara teaches a metallic conductor layer can be formed by a publicly known dry plating method such as sputtering, CVD, vacuum evaporation or a wet plating method such as electrolytic plating and non-electrolytic plating (para. 0041).

It would have been obvious to one of ordinary skill in the art to employ any dry or wet plating method suggested by Hara in forming the conductor layer 14 because the application of a well-known process to make the same would have been within the level of an artisan and require no more than a general knowledge of one skilled in the art.

6. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Renn taken with Hara as applied to claim 48 as above and further in view of Hasegawa et al. (US 6,717,218 of record)

The combined process of Renn and Hara teaches a process as described above, differs from the claim in not disclosing a connection hole in the interlayer insulation film is formed by using a HF acid while masking said interlayer insulation film as claimed. Hasegawa teaches a process for forming contact holes in an interlayer insulation film 12/13/14 by using HF acid while masking the interlayer insulation film with a photoresist layer 160 (Fig. 3C and col. 8, lines 18-22).

It would have been obvious to one of ordinary skill in the art to employ the wet etching method as suggested by Hasegawa in forming interconnect holes in the interlayer insulation film 77/86 because the application of a known process to make the same would have been within the level of an artisan and require no more than a general knowledge of one skilled in the art.

Response to Arguments

7. Applicant's arguments with respect to claims 13-19 and 47-51 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is 571-272-1857. The examiner can normally be reached on Mon-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Trung Dang
Primary Examiner
Art Unit 2823

4/15/07